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John D. Summers

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E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
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WILMINGTON, DE 19805

EXAMINER

NILAND, PATRICK DENNIS

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

06/24/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-Legal.PRC@usa.dupont.com

DETAILED ACTION

1. The amendment of 4/3/09 has been entered. Claims 1, 5, 8, 10-22, 24-25, 27, 29, 31, and 33 are pending.

It is noted that the applicant's representative has mislabeled the instant claims and response as "11/754348".

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 8, 10, 12-13, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pat. Application Publication No. 2004/0084774 Li et al..

Li discloses polynorbornene copolymers (paragraphs 32, 38-47) that have a glass transition temperature of greater than 200 C, preferably greater than 300 C, and less than two percent weight loss after holding at 300 C (paragraphs 17, 31). The solvent is generally xylene (Table 2, 6, 14, paragraph 132). Small amounts of thermal stability additives such as Si are included, which are blended with the polymer or react with the polymer (paragraph 56). Adhesion

Art Unit: 1796

promoters are included in order to promote adhesion of the polymer to the metal substrate (paragraphs 57-73, 84), with a trihydroxyphenyl ether as a preferred adhesion promoter (paragraphs 63). Although Li does not disclose a water absorption of 2% or less, it is examiner's position that Li's recited "less than 2% weight loss" would indicate that the polymer inherently meets the claimed limitation, because less than 2% weight loss at 300 C would indicate that less than 2% water has been liberated from the polymer thereby indicating the polymer has a water absorption of 2% or less.

Therefore, Li anticipates the cited claims.

The applicant's arguments that the argued compounds are structurally different compositions from the recited polynorbornene is not supported by probative evidence. It would appear that the polynorbornene of the reference should be that of the instant claims and have the properties of the instant claims, particularly in view of the loss at 300C noted above. The argument regarding peak curing profile and heat temperature of Li is not persuasive. The instant claims do not exclude heating to 350 C. As long as this heating gives the claimed water absorption, it reads on the instant claims.

The applicant argues the requirements of anticipation. They are met by the above cited reference. Clearly a hydrophobic polynorbornene, e.g. that of Li, which falls within the scope of the instantly claimed polynorbornene, as stated above and noting paragraphs [0040]-[0046] particularly of Li and loses less than 2% when heated at 300C according to Li did not absorb more than 2% water or anything else. Arguments that the polymer of Li are not those of the instant claims do not address the above cited portion of Li and are not commensurate in scope with the instant claims. Applicant's argument that they set out in excruciating detail the

Art Unit: 1796

differences between the instantly claimed polynorbornenes and Li on pages 2-4 of amendment B ignore the depicted polynorbornenes of Li cited above and the scope of the instantly claimed polynorbornenes. The excruciatingly detailed arguments/depictions are therefore not persuasive. The applicant asks what more probative evidence than the technically correct diagrams could be provided. Evidence that the polynorbornenes of the sections of Li cited above do absorb more water than the instantly claimed polynorbornenes or have Tgs outside those of the instantly claimed Tgs that are commensurate in scope with the full disclosure of Li, particularly paragraphs [0040]-[0046] thereof, and the full scope of the instant claims and accounting for the percent loss stated by Li and discussed above in the former case. The examiner does not use theory in this rejection. The rejection relies only on the clear statements of Li, particularly the disclosed Tgs, loss at 300C, which clearly mathematically precludes more than 2% water absorption on its face using only basic mathematical principles that are clear to all, and the formulae of the polynorbornenes of Li cited above. The applicant is incorrect in stating that scientific theory is limited to 103 rejections. Inherency relies on use of scientific theory and is clearly applicable to 102 rejections. The applicant has noted MPEP 2112 in this regard. Furthermore, the cited "scientific theory" portion of the MPEP does not exclude its use in 102 rejections. The applicant's extrapolation in this instance is erroneous and without legal basis. Even if the weight loss was due to monomer, the mass lost would clearly include water at 300C and the mass would equal the monomer plus water if water had been absorbed. This is clear on its face and not rebutted by any probative evidence. Furthermore, since the polynorbornenes of Li are those of the instant claims, they are expected to have the same physical properties. Also,

Art Unit: 1796

they are hydrocarbons which everyone knows to be hydrophobic, i.e. they repel water, which is counter to absorbing it.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

5. Claims 1, 5, 8, 10, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 10-251343 (machine translation from JPO and abstract are used hereafter).

JP 343 discloses a norbornene-based polymer and epoxy group containing norbornene-based polymer which are described in the formulas I and II (abstract; paragraphs 5-70). The polymer is excellent in electric insulation and heat resistance (abstract; paragraphs 1-3). Organic solvents are included (paragraph 54) and iron or transition metal compounds are used (paragraphs 51-53). The glass transition temperature of the polymer is usually 150-350 C, more preferably 100-400 C (paragraph 75). Desirable inorganic fillers include fused silica powder (paragraphs 82, 93) and crosslinking agents such as peroxides are used (paragraphs 83-85). Solvents such as toluene, xylene, and hydrocarbons are used to dissolve the polymer system (paragraph 96). The composition is used for electronic parts such as diodes, transistors, a resistor network, capacitors, an overcoat film for semiconductors, etc. (paragraphs 101, 111).

Although JP 343 is silent with respect to the water absorption value of the polymer, the composition of JP contains similar ingredients to the currently claimed composition, thus it is examiner's position that although it is not specifically recited, the composition in JP 343 would nonetheless inherently meet the requirements for the currently claimed water absorption, or alternatively, would obviously have been present in the JP 343 polymer, absent evidence to the

Art Unit: 1796

contrary.

It is not seen that the instantly claimed norbornyl structure does not read on the polynorbornene of the reference since the claims do not exclude the reference's structure. The applicant's arguments, that the reference does not disclose crosslinking and therefore there can be no motivation to use the instant formula II does not apply to claim 1 which requires no formula II. Crosslinking is clearly possible for the polynorbornene of the reference since it contains epoxy groups.

The applicant argues the requirements of anticipation. They are met by the above cited reference. Arguments that the polymer of JP 343 are not those of the instant claims do not address the above cited portion of JP 343 and are not commensurate in scope with the instant claims, which include the polymers of JP 343 because they do not describe how the claimed monomer bonds within the final polymer and the polymers of JP 343 have the repeating unit of the instant claims. Applicant's argument that they set out in excruciating detail the differences between the instantly claimed polynorbornenes and JP 343 on pages 5-6 of amendment B ignore the depicted polynorbornenes of JP 343 cited above and the scope of the instantly claimed polynorbornes. The excruciatingly detailed arguments/depictions are therefore not persuasive. The applicant asks what more probative evidence than the technically correct diagrams could be provided. Evidence that the polynorbornenes of the sections of JP 343 cited above do absorb more water than the instantly claimed polynorbornenes or have Tgs outside those of the instantly claimed Tgs that are commensurate in scope with the full disclosure of JP 343 and the full scope of the instant claims. The applicant is incorrect in stating that scientific theory is limited to 103 rejections. Inherency relies on use of scientific theory and is clearly applicable to 102 rejections.

Art Unit: 1796

The applicant has noted MPEP 2112 in this regard. Furthermore, the cited "scientific theory" portion of the MPEP does not exclude its use in 102 rejections. The applicant's extrapolation in this instance is erroneous and without legal basis. Furthermore, since the polynorbornenes of JP 343 fall within the scope of the instant claims, they are expected to have the same physical properties. Also, they are hydrocarbons which everyone knows to be hydrophobic, i.e. they repel water, which is counter to absorbing it. The examiner intrinsically relies on inherency rather than scientific theory, more specifically the fact that the polymers fall within the scope of the instant claims and therefore must have their same properties. The hydrocarbon rationale is not theory but well known fact known to high school chemistry students and up. It is taken as supported on its face. MPEP 2144.02 is met to the extent needed but does not apply as much as MPEP 2112 to the instant rejection, which requirements the examiner has clearly met, considering the teachings of the cited prior art. There is no probative evidence to the contrary. The instant claims do not require the argued "single cyclic structure". This argument is not commensurate in scope with the claims therefore, which encompass the claimed unit of the instant claims.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

6. Claims 1, 5, 10, 14-15, 20-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Pat. No. 6492443 Kodemura et al..

Kodemura discloses a norbornene resin composition for electronic parts (col 1, lines 5- 20, 63-67) and improved adhesion to metals (col 2, lines 36-39). The glass transition temperature of

Art Unit: 1796

the norbornene polymer is preferably 120 to 330 C (col 8, lines 40-45). The composition contains crosslinking agents (col 13 line 59 to col 17 line 49) wherein blocked isocyanates are disclosed (col 15, lines 24-29), fillers to improve mechanical strength, the fillers containing metal (col 17, lines 50 to col 18 line 8), flame retardants also containing metal compounds (col 18 line 15 to col 19 line 8), and other compounding additives (col 20 lines 1-34). Solvents such as toluene, xylene, hexane, etc are used to dissolve the norbornene polymer (col 20, lines 35-51). The composition has be molded into various parts (col 20, lines 66-67) or forming a sheet with a thickness of 50-500 ~m (col 21, lines 11-23) and is useful in electronic parts such as capacitors, circuits, transistors, relays, etc (col 23, lines 24-57). The composition is cured at about 200 C by heat curing for one hour (col 31, line 67) or by heating to 100 C for 20 hours (col 31, lines 20). Although Kodemura is silent with respect to the water absorption value of the polymer, the composition of Kodemura contains similar ingredients to the currently claimed composition and contains a norbornene polymer falling within the scope of the instantly claimed polymer, thus it is examiner's position that although it is not specifically recited, the norbornene polymer in Kodemura would nonetheless inherently (MPEP 2112 is noted by the applicant's arguments) meet the requirements for the currently claimed water absorption, or alternatively, would obviously have been present in the Kodemura polymer, absent evidence to the contrary.

The polymer is a polynorbornene which appears to be that of the instant claims. It is therefore expected to have the same properties. The applicant has provided no evidence to the contrary. The massive mount of hydrocarbon will clearly repel water significantly. The sections recited in the prior office action regarding using the compositions of the patentee in capacitors and resistors contradicts the applicant's arguments regarding using the compositions as binder or encapsulant

Art Unit: 1796

as "sealing parts", polymer compositions, "sealing materials for potting", and the remainder of the disclosure in this regard are clearly binder or encapsulant. Note column 23, lines 23-57. The dielectric constant and dielectric loss tangent of column 24, lines 1-20 also imply that the materials are useful as capacitor or resistor sealant or binder. The instant claims are directed to the composition per se, not the intended use.

The applicant argues the requirements of anticipation. They are met by the above cited reference. Arguments that the polynorbornenes of Kodemura are not those of the instant claims do not address the above cited portion of Kodemura and are not commensurate in scope with the instant claims, which include the polymers of Kodemura clearly. Applicant's argument that they set out in excruciating detail the differences between the instantly claimed polynorbornenes and Kodemura on pages 6-8 of amendment B ignore the disclosed polynorbornenes of Kodemura cited above and the scope of the instantly claimed polynorbornenes. The excruciatingly detailed arguments/depictions are therefore not persuasive.

The applicant asks what more probative evidence than the technically correct diagrams could be provided. Evidence that the polynorbornenes of the sections of Kodemura cited above do absorb more water than the instantly claimed polynorbornenes or have Tgs outside those of the instantly claimed Tgs that are commensurate in scope with the full disclosure of Kodemura JP 343 and the full scope of the instant claims. The applicant is incorrect in stating that scientific theory is limited to 103 rejections. Inherency relies on use of scientific theory and is clearly applicable to 102 rejections. The applicant has noted MPEP 2112 in this regard. Furthermore, the cited "scientific theory" portion of the MPEP does not exclude its use in 102 rejections. The applicant's extrapolation in this instance is erroneous and without legal basis. Furthermore,

Art Unit: 1796

since the polynorbornenes of Kodemura fall within the scope of the instant claims, they are expected to have the same physical properties. Also, they are hydrocarbons which everyone knows to be hydrophobic, i.e. they repel water, which is counter to absorbing it. The examiner intrinsically relies on inherency rather than scientific theory, more specifically the fact that the polymers fall within the scope of the instant claims and therefore must have their same properties. The hydrocarbon rationale is not theory but well known fact known to high school chemistry students and up. It is taken as supported on its face. MPEP 2144.02 is met to the extent needed but does not apply as much as MPEP 2112 to the instant rejection, which requirements the examiner has clearly met, considering the teachings of the cited prior art. There is no probative evidence to the contrary. The instant claims do not require the argued “single cyclic structure”. This argument is not commensurate in scope with the claims therefore, which encompass the claimed unit of the instant claims.

The applicant’s arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

7. Claims 16, 19 and 33 are rejected under 35 U.S.C. 103(a) as being Unpatentable over US Pat. No. 6492443 Kodemura et al..

The discussion with respect to Kodemura in paragraph 6 above is incorporated herein by reference.

Although Kodemura discloses the composition as useful for electronic parts, he does not disclose use as a discrete or planar capacitor.

With respect to (1), Kodemura broadly discloses that the composition is useful in electronic parts such as capacitors (col 23, lines 24-57). It would have been obvious to one of ordinary skill in

Art Unit: 1796

the art to use the composition in all types of capacitors such as discrete or planar capacitors because Kodemura makes clear that the composition is useful for capacitors in general, so one of ordinary skill in the art would have a reasonable expectation of success when using the composition for more specific kinds of capacitors.

The polymer is a polynorbornene which appears to be that of the instant claims. It is therefore expected to have the same properties. The applicant has provided no evidence to the contrary. The massive amount of hydrocarbon will clearly repel water significantly. The sections recited in the prior office action regarding using the compositions of the patentee in capacitors and resistors contradicts the applicant's arguments regarding using the compositions as binder or encapsulant as "sealing parts", polymer compositions, "sealing materials for potting", and the remainder of the disclosure in this regard are clearly binder or encapsulant. Note column 23, lines 23-57. The dielectric constant and dielectric loss tangent of column 24, lines 1-20 also imply that the materials are useful as capacitor or resistor sealant or binder. No unexpected results are seen in using the binder of the patentee in the electronic articles discrete and planar capacitors. Its disclosed benefits to electronic devices would have been expected therein.

The applicant argues, in addition to those arguments addressed with respect to Kodemura alone in the above paragraph, that the examiner has not provided rationale to modify Kodemura to obtain the instantly claimed polynorbornene. This is required because the polynorbornene of Kodemura falls within the scope of that of the instant claims, considering the scope of the instantly claimed polynorbornenes and the full disclosure of Kodemura.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

Art Unit: 1796

8. Claims 16-19, 25, 27, 29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 6492443 Kodemura et al. in view of US Pat. No. 5470643 Dorfman.

The discussion with respect to Kodemura in paragraph 7 above is incorporated herein by reference.

Although Kodemura discloses the composition as useful for electronic parts, he does not disclose use as a polymer thick film resistor.

Dorfman discloses a polymer thick film resistor composition which comprises particles of conductive metal and particular material, thermoplastic resin, and organic solvent; the composition is cured by heating (abstract). The resistor exhibits a resistance of less than 5% (col 2, line 23). It would have been obvious to one of ordinary skill in the art to use the composition disclosed by Kodemura for a thick film resistor that exhibits a resistance of less than 5% (as disclosed by Dorfman) because the composition by Kodemura is useful in many types of electrical applications and one would use for a PTF resistor since both Kodemura and Dorfman describe similar composition and the Kodemura composition further exhibits excellent electrical properties (col 1, lines 14-19), so one would have a reasonable expectation of success in the combination.

Absent evidence to the contrary, it is examiner's position that such a resistor made from the composition by Kodemura/Dorfman would intrinsically have a percent resistance change of less than +5% with respect to the relative humidity test and a percent resistance change of less than +1% with respect to an ESD test since the composition is the same of that claimed and Dorfman discloses that the resistance change would be less than 5% in the boiling water test.

Art Unit: 1796

The polymer is a polynorbornene which appears to be that of the instant claims. It is therefore expected to have the same properties. The applicant has provided no evidence to the contrary. The massive amount of hydrocarbon will clearly repel water significantly. This is an inherency statement intrinsically. The applicant argues MPEP 2112. The theory of hydrocarbons repelling water is well established enough and the polynorbornene of the reference falls within the scope of the instantly claimed polynorbornene such that this statement is adequately supported. The sections recited in the prior office action regarding using the compositions of the patentee in capacitors and resistors contradicts the applicant's arguments regarding using the compositions as binder or encapsulant as "sealing parts", polymer compositions, "sealing materials for potting", and the remainder of the disclosure in this regard are clearly binder or encapsulant. Noie column 23, lines 23-57. The dielectric constant and dielectric loss tangent of column 24, lines 1-20 also imply that the materials are useful as capacitor or resistor sealant or binder. No unexpected results are seen in using the binder of the patentee in the electronic articles discrete and planar capacitors. Its disclosed benefits to electronic devices would have been expected therein. The applicant's arguments are therefore not persuasive. A resistor is an electronic device broadly encompassed by the language of the Kodemura reference for which Kodemura's binder is useful in making. No unexpected results stemming from the patentee's binder's use in resistors is seen in a manner commensurate in scope with the instant claims and the cited prior art.

The applicant argues, in addition to those arguments addressed with respect to Kodemura alone in the above paragraph, that the examiner has not provided rationale to modify Kodemura to obtain the instantly claimed polynorbornene. This is required because the polynorbornene of

Art Unit: 1796

Kodemura falls within the scope of that of the instant claims, considering the scope of the instantly claimed polynorbornenes and the full disclosure of Kodemura.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

9. Claims 16-18, 25, 27, 29, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-251343 (machine translation from JPO and abstract are used hereafter) in view of US Pat. No. 5470643 Dorfman.

The discussion with respect to JP 343 in paragraph 5 above is incorporated herein by reference.

Although JP 343 discloses the composition as useful for electronic parts, it does not disclose use as a polymer thick film resistor.

Dorfman discloses a polymer thick film resistor composition which comprises particles of conductive metal and particular material, thermoplastic resin, and organic solvent; the composition is cured by heating (abstract). The resistor exhibits a resistance of less than 5% (col 2, line 23). It would have been obvious to one of ordinary skill in the art to use the composition disclosed by JP 343 for a thick film resistor that exhibits a resistance of less than 5% (as disclosed by Dorfman) because the composition by JP 343 is useful in many types of electrical applications and one would use for a PTF resistor since both JP 343 and Dorfman describe similar composition and the JP 343 composition further exhibits good thermal and moisture resistance (para 3), so one would have a reasonable expectation of success in the combination.

Absent evidence to the contrary, it is examiner's position that such a resistor made from the

Art Unit: 1796

composition by JP 343/Dorfman would intrinsically have a percent resistance change of less than ~:5% with respect to the relative humidity test and a percent resistance change of less than +1% with respect to an ESD test since the composition is the same of that claimed and Dorfman discloses that the resistance change would be less than 5% in the boiling water test.

The applicant argues, in addition to those arguments addressed with respect to JP 343 alone in the above paragraphs, that the examiner has not provided rationale to modify JP 343 to obtain the instantly claimed polynorbornene. This is required because the polynorbornene of JP 343 falls within the scope of that of the instant claims, considering the scope of the instantly claimed polynorbornenes and the full disclosure of JP 343.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 343, as applied to claims 1-8, 10, 22, 23 above, in view of JP 04214778 (wherein the Derwent abstract is used hereafter).

JP 343 does not disclose that the composition further contains polyhydroxystyrene. JP 778 discloses a composition for use on circuit substrate and electronic equipment and parts. The composition contains a conductive powder and organic binder. The use of polyhydroxystyrene in the composition improve the adhesion of the composition to the metal surface. Thus, it would have been obvious to one of ordinary skill in the art to include polyhydroxystyrene in the composition disclosed by JP 343 in order to improve adhesion properties for the composition when used for electronic parts.

It is not seen that the instantly claimed norbornyl structure of JP 343 does not read on the

Art Unit: 1796

polynorbornene of the reference since the claims do not exclude the reference's structure. The applicant's arguments that the reference does not disclose crosslinking and therefore there can be no motivation to use the instant formula II does not apply to claim 1 which requires no formula II. Crosslinking is clearly possible for the polynorbornene of the reference since it contains epoxy groups. The rejection provides the proper motivation to use the compositions in capacitors or resistors.

The applicant argues, in addition to those arguments addressed with respect to JP 343 alone in the above paragraphs, that the examiner has not provided rationale to modify JP 343 to obtain the instantly claimed polynorbornene. This is required because the polynorbornene of JP 343 falls within the scope of that of the instant claims, considering the scope of the instantly claimed polynorbornenes and the full disclosure of JP 343.

The applicant's arguments have been fully considered but are not persuasive for the reasons stated above and in the cited prior art. This rejection is therefore maintained.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1796

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Friday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Patrick D Niland/
Primary Examiner
Art Unit 1796